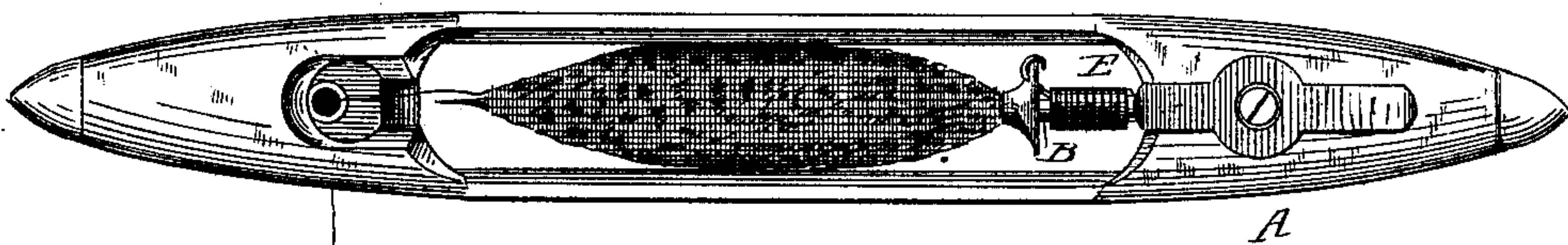


C. J. HIGGINS.  
Shuttles for Looms.

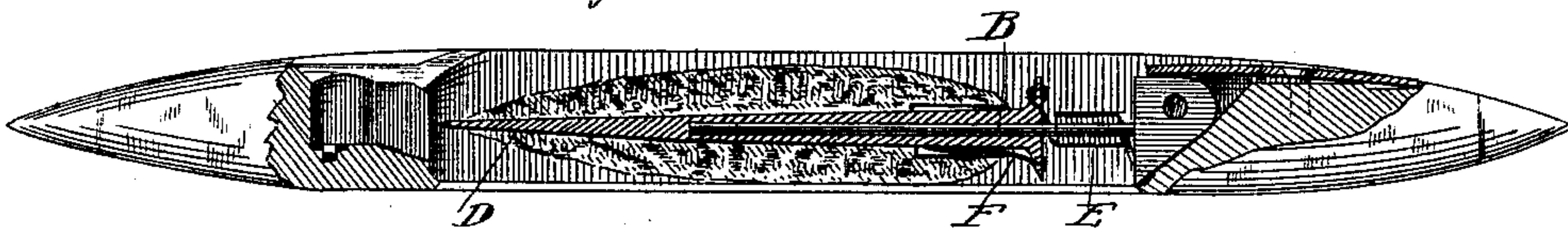
No. 197,131.

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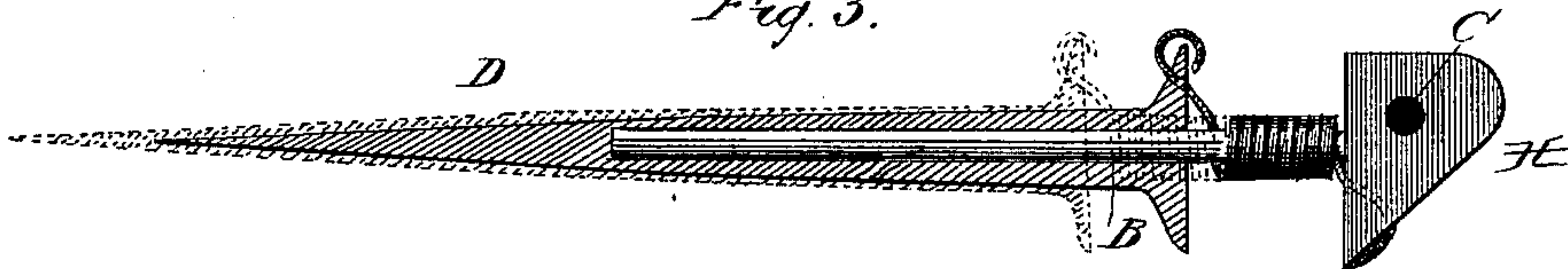
*Fig 1*



*Fig 2*



*Fig 3.*



Witnesses

*Edw. G. Dietrich,*

*Thomas L. Conroy,*

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*by Daniel Breed,*

*att'y.*



# UNITED STATES PATENT OFFICE.

CHARLES J. HIGGINS, OF HALLOWELL, MAINE.

## IMPROVEMENT IN SHUTTLES FOR LOOMS.

Specification forming part of Letters Patent No. **197,131**, dated November 13, 1877; application filed October 20, 1877.

*To all whom it may concern:*

Be it known that I, CHARLES J. HIGGINS, of Hallowell, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Loom-Shuttle Spindles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

In the accompanying drawings, Figure 1 is a top view of a loom-shuttle with my improvements. Fig. 2 is a partial section of the same. Fig. 3 is a detached view of my compound spindle, the outer part or tube being in section.

The chief object of my invention is to entirely overcome the objections heretofore existing to the use of the cop in loom-weaving—to wit, first, the liability of injury to the cop when being adjusted and pressed home upon the spindles in use; secondly, the great waste occasioned by the cop being partially broken and thrown off from the spindle by concussion of the blow on the shuttle-point; and, thirdly, the waste resulting from the cop not all running off from the spindle.

My improvements will be fully understood by the following description.

In the application of my improvements, the loom-shuttle A may be of the ordinary general construction, having the spindle-head H and pivot or hinge C. The sliding spindle D is made very tapering, and is fitted to the inner or stationary spindle B, which is of uniform diameter throughout its whole length, thus allowing the spindle D to slide freely, but preventing any lateral motion or jar from the stroke of the shuttle. On the shank of the stationary spindle B is a tensile coiled spring, E, one end of which is attached to the heel or rear of the spindle D, while the other end is attached to the stationary spindle or its head H.

By this arrangement the sliding spindle is held or connected to the stationary spindle B solely by means of the tensile spring E. Thus the sliding spindle is also connected to the

body of the shuttle by means of the tensile spring and the stationary spindle or its head.

The shuttle, in moving forward, strikes the picker, and is thus suddenly stopped by a blow. This blow, often repeated in weaving, is liable to move the cop forward on the spindle, or injure it by the severe shock, thus causing waste; but my tensile spring gives an elastic resistance, which relieves the cop from any shock or disturbance.

The advantages of my invention have been demonstrated by actual use of the improvement in a cotton-mill, where the tension of the binders was slackened and the shuttle allowed to strike with more than ordinary force or concussion, and without injury to the cop, and thus requiring less power to operate the shuttle.

A small spring or projection, F, is attached to the heel of the sliding spindle D, in order to hold the cop tube or paper in place when the cop is pressed home.

These improvements may be applied to solid spindles, with proper modifications.

I am aware that open spiral springs have been used with loom-shuttle spindles when operated under compression; but these springs, when completely compressed, come to a sudden and dead stop, and thus transfer the blow to the cop, and, therefore, they fail to accomplish the object aimed at; also, the frequent compression of the spring by the continued blows of the shuttle will soon destroy or deaden the spring.

I am also aware that spindles have been made in two parts, connected by a spring; but in such cases a tapering hole was necessary in the sliding spindle to receive the spring; but I believe that my construction is new.

Having described my invention, I claim—

1. The combination, with the stationary spindle B and sliding spindle D, of the tensile spring E, connected to the said sliding spindle, and to stationary spindle, or the head thereof, substantially as and for the purposes specified.

2. The sliding spindle D, constructed of the form shown, and provided with the spring or projection F, substantially as and for the purposes set forth.

3. The combination, with the body of a loom-shuttle and its stationary spindle, of a sliding spindle and tensile spring, E, connected with the base of said sliding spindle, and to the rear of the stationary spindle, or the head thereof, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES J. HIGGINS.

Witnesses:

DANIEL BREED,  
D. P. COWL.